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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,258	12/15/2003	Sergey Ioffe	0879-0434P	1477
2292 7590 05/07/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER ABDI, AMARA	
			ART UNIT	PAPER NUMBER
			2609	
			NOTIFICATION DATE	DELIVERY MODE
			05/07/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

## Office Action Summary

Application No.

10/734,258

Applicant(s)

IOFFE, SERGEY

Examiner

Amara Abdi

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 2-3,6-7,10-14,19,23, and 26-30 are objected to because of the following informalities:

(1) Claim 2, line 2, "**the** appearance" should be changed to "**an** appearance", the same informality was found in **claim 18**, line 2;

(2) Claim 3, line2, "**an** existing" should be changed to "**the** existing", and on line 3, "**an** additive" should be changed to "**the** additive"; the same informality was found in **claim 19**, line 2-3;

(3) Claim 6, line 2, "**an** object" should be changed to "**the** object", and the same informality was found in **claim 7**, line 1; and **claim 23**, line 1-2;

(4) Claim 10, line 1, "**an** additive" should be changed to "**the** additive", on line 2, "**a** particular" should be changed to "**the** particular"; and "**a** detected" should be changed to "**the** detected", the same informality was found in **claim 26**, line 1-2;

(5) Claim 11, line 1, "**an** additive" should be changed to "**the** additive"; and the same informality was found in **claim 27**, line 1;

(6) Claim 12, line 1, "**an** additive" should be changed to "**the** additive", and on line 2, "**a** feature" should be changed to "**the** feature", the same informality was found in **claim 28**, line 1-2.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-14,16-30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US PG PUB 2004/0264780) in view of Okazaki et al. (US 6,873,713).

(1) Regarding claims 1 and 17:

Zhang et al. disclose a method and system (paragraph [0004], line1) for automatically recognizing objects in a digital image, comprising:

accessing digital image data containing an object of interest therein (paragraph [0037], line 1-5);

detecting an object of interest in said digital image data (paragraph [0004], line 4-5; and paragraph [0045], line 1-3); and

applying each extracted feature to a previously determined additive probability model to determine the likelihood that the object of interest belongs to an existing class (paragraph [0021], line 6-10; and paragraph [0041], line 7-15).

However, Zhang et al. does not disclose the method and an apparatus, where normalizing the object of interest to generate a normalized object representation; and extracting the plurality of features from the normalized object representation as recited in claims 1 and 17.

Okazaki et al. teaches an image processing, apparatus and method for extracting feature of object, where normalizing the object of interest to generate a normalized object representation; and extracting the plurality of features from the normalized object representation (column 2, line 27-29).

One skilled in the art would have clearly recognized the method where normalizing object of interest to obtain a normalization object, and extracting a plurality of features from the normalized object (column 6, line 25-30). Therefore it would have been obvious to one in ordinary skill at the time of the invention to combine the system of Okazaki et al., where normalizing the object of interest, in the system of Zhang et al., because such feature can reduce the load on the user upon registration and verification, can greatly improve verification performance, and can minimize increase in complicated computation and processing cost without largely changing a pattern verification process algorithm from a single direction can be improved (column 13, line 18-23), as well as it is suitably applied to a personal authentication apparatus for authenticating a person on the basis of vital information such as a facial image (column 1, line 18-21).

(2) Regarding claims 2 and 18:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the previously determined additive probability model is an Additive Gaussian Model that decomposes the appearance of an object into components corresponding to class and view (paragraph [0071], line 1-5).

(3) Regarding claims 3 and 19:

Zhang et al. further disclose the method and system (paragraph [0004], line1) comprising:

selecting an existing class for said object of interest based on said likelihood (paragraph [0021], line 7-8); and re-calculating an additive probability model for the selected class using a feature value of the object of interest (paragraph [0041], line 8-10), (the examiner interpreted the recalculating of the additive probability model as the same concept as the calculating of additive probability model).

(4) Regarding claims 4 and 20:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the object of interest is a face (paragraph [0004], line 4-7) and the method performs face recognition (paragraph [0017], line 1).

(5) Regarding claims 5 and 21:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the object of interest is a face (paragraph [0004], line 4-7), and the method performs face verification (paragraph [0017], line 1) based on said likelihood (paragraph [0041], line 9-10).

(6) Regarding claims 6 and 22:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the object of interest is a face (paragraph [0004], line 4-7), and the step of detecting an object of interest detects facial features in the digital image data (paragraph [0043], line 1-4).

(7) Regarding claims 7 and 23:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the step of detecting an object of interest utilizes early rejection to determine that an image region does not correspond to a facial feature (paragraph [0021], line 16-18), (the examiner interpreted the use of marginal probability as the early rejection).

(8) Regarding claims 8 and 24:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the object of interest is a face (paragraph [0004], line 4-7) in a digital photo (paragraph [0042], line 3-4; and paragraph [0043], line 1-4).

(9) Regarding claims 9 and 25:

Zhang et al. further disclose the method and system (paragraph [0004], line1), comprising:  
generating an additive probability model for each of a plurality of classes based on feature values for objects belonging to said classes (paragraph [0021], line 7-10).

(10) Regarding claims 10 and 26:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the step of generating an additive probability model for a particular class is repeated each time a detected object of interest is added to the corresponding class (paragraph [0021], line 7-10), (the examiner interpreted the repeating of an additive probability model as the concept as the additive probability applied in the first step).

(11) Regarding claims 11 and 27:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the step of generating an additive probability model clusters examples belonging to a

single class (paragraph [0021], line 2-6) so as to generate multiple additive probability models for each class identity (paragraph [0021], line 9), (the examiner interpreted that the probabilities are modeled for each class identity).

(12) Regarding claims 12 and 28:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the step of generating an additive probability model computes a posterior distribution for a feature value mean from at least one example feature value (paragraph [0083], line 4-14).

(13) Regarding claims 13 and 29:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the additive probability model models variance of said feature value mean (paragraph [0017], line 14-17), (the variance is interpreted as the estimate density).

(14) Regarding claims 14 and 30:

Zhang et al. further disclose the method and system (paragraph [0004], line1), where the variance of the feature value mean approaches zero as more examples are associated with the corresponding class (paragraph [0071], line 4-7), (the variance is interpreted as the estimate density)

(15) Regarding claims 16 and 32:

Zhang et al. further the method and system (paragraph [0004], line1), where the digital image data represents a digital photo (paragraph [0042], line 3-4).



4. Claims 15 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. and Okazaki et al. as applied to claim 1 above, and further in view of Bradshaw (US PGPUB 2002/0122596).

Zhang et al. disclose all the subject matter as described in claims 1 and 17 above.

However, Zhang et al. does not disclose the method and system (paragraph [0004], line1), where executing a training stage to identify a set of independent features that discriminate between classes as recited in claims 15 and 31.

Bradshaw teach hierarchical, probabilistic, localized, semantic image classifier, where executing a training stage to identify a set of independent features that discriminate between classes (paragraph [0106], line 1-2; and line 6-8).

One skilled in the art would have clearly recognized the method, where executing a training stage to identify a set of independent features that discriminate between classes (paragraph [0106], line 6-11). Therefore it would have been obvious to one in ordinary skill at the time of the invention to combine the system of Bradshaw, where the features discriminate between classes, in the system of Zhang et al., because such feature has the most cost effective and efficient image retrieval approach available (paragraph [0006], line 5-6). As well as it is employing multiple hierarchical layers. The task of combining the results across layers is made more computationally efficient by assuming statistical independence between layers (paragraph [0050], line 1-2; and line 5-7).

**Conclusion**

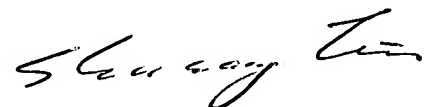
4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Trivedi et al. (US PGPUB 2006/0187305) disclose a digital processing of video images.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amara Abdi whose telephone number is (571) 270-1670. The examiner can normally be reached on Monday through Friday 7:30 Am to 5:00 PM E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amara Abdi  
04/26/2007



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